

OPEN MEETING AGENDA ITEM

From: Abhay Padgaonkar
 Date: July 12, 2021
 Docket: 2022 RES Implementation Plan (E-01345A-21-0240); Energy Rules (RU-00000A-18-0284)
 Re: **Solana PPA — a \$2 Billion Boondoggle — Must Be Externally Audited**

Dear Chairwoman Márquez Peterson and Commissioners:

APS is right. You cannot judge prudence in hindsight solely based on outcomes. So it's critical that we review along with the outcomes also the facts and circumstances and specifically who at APS knew what at the time APS committed to the Arizona Solar One, LLC ("Solana") PPA. Because the Solana plant accounted for **\$108.1 million** or 56% of the total PPA amount APS paid in 2020 for long-term PPAs — more than all the other highlighted PPAs in APS's response¹ *combined* — I will focus only on the Solana PPA.

Ryan Randazzo published an important story in the Arizona Republic in February 2008 with several direct quotes from then APS president Don Brandt.² Below are key excerpts from Mr. Randazzo's story in the boxes (highlighting is mine), followed by my research, analysis, and comments in bullets. The analysis demonstrates that the Solana PPA with its 14 cents/kWh price for 30 years was grossly imprudent based even on the contemporaneous facts, circumstances, and knowledge as well as the expected and actual outcomes. In addition to the huge premium already passed onto the captive ratepayers from 2014-2021, the Solana PPA will fleece the ratepayers for another **\$2+ billion** in above-market costs until the end of its 30-year term.

The clear and convincing evidence presented here should prompt the Commission to order an external audit of the Solar One, LLC (a.k.a. Solana) PPA for the purposes of definitively determining its prudence. It must be noted, however, that the Renewable Energy Standards are not to blame because as Mr. Randazzo reported in the 2008 story, "Brandt said APS would buy energy from Solana even without the mandate."

DOUBLE WHAMMY: PRICE TAG DOUBLED WHILE SOLAR ENERGY PRICES PLUNGED

A solar-energy plant planned near Gila Bend will be among the world's largest when it opens in **2011**, Arizona Public Service Co. said Wednesday.

- In reality, the Solana plant, announced in 2008 and supposed to open in **2011**, did not have a full year's production until **2014**.
- During the 6-year period from 2008 to 2014, the price tag for the plant doubled from \$1 billion to \$2 billion while the market price for solar plunged dramatically — making the plant uneconomical from the very start. It is not clear if APS made any contractual amendments as a result.

CHRONIC PROBLEMS: GENERATION DEFICIT, \$1.5 MILLION FINE, AND TRANSFORMER FIRES

At 280 megawatts, enough to power at least 70,000 households, the plant will make even more energy than a similar facility announced in December.

- According to the U.S. Department of Energy, which provided a \$1.45 billion loan guarantee to finance Solana, the plant was expected to generate **900,000 MWh** of energy per year using the project's and NREL Technology specific capacity factors.³
- IN REALITY, the Solana plant produced only about 600,000 MWh in its first full year, **hasn't produced 800,000 MWh in any year, and has averaged only about 80% net generation** compared to the promised

¹ "APS Response to the Chairwoman" at: <https://docket.images.azcc.gov/E000014563.pdf>

² Randazzo, Ryan. "Plant to brighten state's solar future" azcentral.com, Feb. 21, 2008, <http://archive.azcentral.com/business/articles/0221biz-solar0221.html>

³ "Solana: U.S. Dept. of Energy Loan Programs Office" at: <https://www.energy.gov/lpo/solana>

900,000 MWh, according to the latest Energy Information Administration (EIA) data.⁴

- Even the future estimate APS has provided for the next five years 2022-2026 is only **844,828 MWh**.
- More importantly, APS knew or should have known that concentrated solar power is expensive compared to photovoltaic solar and that the plants don't always work as advertised. Sure enough, the Solana plant has been beset with numerous operational and environmental problems: In 2016, Maricopa County fined the plant \$1.5 million for violations of air quality standards and in 2017 it had two transformer fires.⁵

HIGHWAY ROBBERY: SOLANA PPA COSTING 4 TIMES THE CURRENT MARKET PRICE AFTER ONLY 6 YEARS

Unlike that partnership, APS will buy all the power from Solana, **\$4 billion worth over 30 years**, making it a much bigger commitment from the utility.

APS will pay about **14 cents per kilowatt-hour**, compared with about 10 cents per kilowatt-hour from natural-gas plants at peak demand.

14 cents: Average price APS will pay per kilowatt-hour over the life of the plant.

9 cents: Average price APS customers pay today per kilowatt-hour for electricity generated through combined nuclear, coal, natural-gas and renewable sources.

The **premium** is worth it because coal and natural-gas prices are unpredictable, and emissions from those plants likely someday will be taxed for their contributions to global climate change, Brandt said. That makes predictable solar prices attractive.

- Clearly, Don Brandt and APS knew at the time in 2008 that they were locking the captive ratepayers into a 14 cents per kWh price that was far higher not only than the Market Cost of Comparable Conventional Generation but also far higher than: a) what the current customer rates (9 cents) were or b) even the peak demand price (10 cents) at the time.
- Knowing both this massive price **premium** and the highly expected outcome of solar price drop at the time, some prudent actions APS should have taken to protect the ratepayers include signing a shorter term PPA (FERC defines "long term" as five years or longer), or building in a price de-escalation clause to match declining prices, or both. **APS likely did neither, which would make this an imprudent investment.**
- So, when the plant finally became fully operational in 2014, even the unsubsidized Levelized Cost of Energy (LCOE) for Solar PV had plunged to **7.2-8.6 cents per kWh**, according to Lazard's LCOE Analysis⁶ — versus the **14 cents per kWh** price APS had committed the captive ratepayers to for the next 30 years.
- APS's response to the Chairwoman⁷ states that APS paid \$108,106,118 for 775,704,000 kWh in 2020. So APS is, in fact, paid about 14 cents per kWh in 2020.
- **This outrageous price gouging of ratepayers — already 4 times higher than the average LCOE price of about 3.65 cents in 2020 — will only worsen for the next 22-23 years.**
- Also, considering the imprudence involved here, **I am totally opposed to granting any rate of return on PPAs.** If APS can enter into a PPA at astronomical costs when they were just pass-through, just imagine what APS will do if it can earn 10% profit off them! The utilities do not need any more perverse incentives.

HIGHWAY ROBBERY: \$80 MILLION ABOVE-MARKET COST IN 2020 ALONE

The extra cost will be blended into existing APS rates, which are kept at about 9 cents per kilowatt-hour because of inexpensive energy from Palo Verde Nuclear Generating Station. Brandt said that, as the utility signs more solar contracts, **he expects the price to keep falling.**

- As stated before, Don Brandt and APS clearly knew at the time that the PPA "premium" was an "extra

⁴ "Solana Generating Station, annual". Electricity Data Browser. Energy Information Administration. Retrieved July 11, 2021, <https://www.eia.gov/electricity/data/browser/#/plant/56812?freq=A&ctype=linechart&itype=pin&maptype=0&pin=&linechart=ELEC.PLANT.GEN.56812-ALL-ALL.A&columnchart=ELEC.PLANT.GEN.56812-ALL-ALL.A>

⁵ "Dark Clouds — Transformer Fires and Air Pollution — Continue to Follow Solana Power Plant" at: <https://www.phoenixnewtimes.com/news/arizonas-solana-solar-plant-transformer-fires-more-air-pollution-9640548>

⁶ "Lazard's Levelized Cost of Energy Analysis" at: <https://www.lazard.com/media/451419/lazards-levelized-cost-of-energy-version-140.pdf>

⁷ "APS Response to the Chairwoman" at: <https://docket.images.azcc.gov/E000014563.pdf>

cost" and Mr. Brandt expected **"the price to keep falling."** In fact, even the *unsubsidized* utility-scale solar LCOE plummeted by **90%** between 2009-2020, according to Lazard.

- The above-market price APS is paying (14 cents) vs. the 2020 average market LCOE price (3.65 cents) cost APS ratepayers **\$80.3 million** in 2020 alone for the 775.7 GWh purchased through the Solana PPA.
- At that rate, over the 5-year period from 2022-2026, the above-market costs would amount to more than **\$400 million** — and yet APS has recorded only a total of **\$119.8 million** for that period in **Exhibit 3B, Line 7** and has likely shoved the rest of the above-market costs as market costs into the PSA adjustor.⁸
- **The Commission must immediately investigate this massive discrepancy along with the Market Cost of Comparable Conventional Generation methodology and its application.**

"ABSOLUTELY" NOTHING TO DO WITH RENEWABLE ENERGY STANDARDS

Brandt said APS would buy energy from Solana even without the mandate.

"Absolutely," he said. "This makes economic and operational sense."

"This is a turning point for APS and the future of the state of Arizona as we move to become the solar capital of the world," APS President Don Brandt said, estimating the Solana plant will cost more than \$1 billion and cover 3 square miles.

"It will be the dawn of the Solar Age in Arizona," Brandt added.

- The very gradual Renewable Energy Standards (RES) set by the Commission in 2006 — as Mr. Brandt made very clear at the time in 2008 — had very little to do with APS's imprudent decisions. RES would have required only **5%** of retail electric sales by 2015. With the Solana plant still on paper, mired in lack of financing after the recession, and far from being operational, **APS committed in 2009 to doubling the interim requirement from 5% to 10% by 2015, five years ahead of schedule⁹ in exchange for a rate hike.**
- By so doing, however, APS prematurely locked the ratepayers into a 30-year boondoggle when the gradual **RES standards clearly didn't require it** — and at a time when the solar technology was not cost effective but was expected to show a rapid decline in the coming years. **That was and still is imprudent.**
- Of course, it made "economic and operational sense" to APS and Mr. Brandt: They would get all the glory for bringing "the dawn of the Solar Age in Arizona" while the captive ratepayers would be stuck with the massive tab for the next 30 years.
- **If the Commission fails to audit its prudence, the Solana PPA will continue to fleece the ratepayers for \$2 billion in above-market costs over the next 22-23 years.¹⁰**

THE COMMISSION MUST ORDER AN EXTERNAL PRUDENCE AUDIT OF THE SOLANA PPA

The Arizona Administrative Code (A.A.C) requires that prudent investments not be obviously wasteful, "when viewed in the light of all relevant conditions known or which in the exercise of reasonable judgment should have been known, at the time such investments were made."¹¹

The clear and convincing evidence presented here of an obviously wasteful investment, even at the time, must prompt the Commission to order an external audit of the Solana PPA's prudence and set aside the presumed prudence consideration it may have once received in order to rescue the ratepayers from this \$2 billion boondoggle.

⁸ "APS Application for RES Implementation Plan, Exhibit 3B" at: <https://docket.images.azcc.gov/E000014426.pdf#page=24>

⁹ "2009 Pinnacle West Form 10-K, P.10" at: <https://d1lge852tjjqow.cloudfront.net/CIK-0000764622/5ac55126-eed8-44c9-a54d-c8542e92e6e4.pdf#page=17>

¹⁰ 844.8 GWh purchased each year * estimated 11 cents/kWh above-market solar price * 22 years till the end of the PPA = \$2 Billion

¹¹ See A.A.C. R14-2-103(l) (defining prudent investments).